

What is claimed is:

## CLAIMS

1. A method for enabling provision of service-levels in an Ethernet-over-synchronous communication network, the method comprising:  
5 receiving Ethernet frames at an input rate;  
mapping said Ethernet frames into a synchronous protocol thereby producing mapped data frames suitable for transmission in said synchronous protocol;  
10 generating a pause signal after a received amount of said Ethernet frames reaches or exceeds a threshold capacity level, said pause signal being generated in accordance with a service-level agreement (SLA) determining an output rate based upon an aggregate rate enabled by K memory containers out of N available memory containers, where K and N are integers; and  
15 outputting the mapped data frames from the K memory containers thereby providing synchronous transmissions at said output rate.
2. The method according to claim 1 and wherein said generating step  
20 comprises preventing transmission of said Ethernet frames at a capacity that reaches or exceeds a capacity allowed by the SLA.
3. The method according to claim 1 and wherein said Ethernet-over-synchronous communication network comprises at least one of the following: Ethernet-over-SONET; and Ethernet-over-SDH network.
- 25 4. The method according to claim 1 and wherein said input rate comprises one of the following: a rate of 1 gigabit per sec; a rate of 10 gigabit per sec; a rate of 100 megabit per sec; and a rate of 10 megabit per sec.

5. The method according to claim 1 and wherein said generating step comprises dynamically generating the pause signal in accordance with an SLA provisioned or determined in real-time.

6. The method according to claim 1 and wherein said generating step comprises  
determining K that is required for supporting said SLA; and  
selecting said K.

7. Apparatus for enabling provision of service-levels in an Ethernet-over-synchronous communication network, the apparatus comprising:  
an Ethernet receiving buffer operative to receive Ethernet frames at an input rate;  
mapping circuitry operatively associated with the Ethernet receiving buffer and operative to map the Ethernet frames into a synchronous protocol thereby producing mapped data frames suitable for transmission in said synchronous protocol;  
a plurality of memory containers N operatively associated with the mapping circuitry;  
a controller operatively associated with the N memory containers and the mapping circuitry and operative to generate a pause signal after said Ethernet receiving buffer is filled by an amount of said Ethernet frames that reaches or exceeds a threshold capacity level, said pause signal being generated in accordance with a service-level agreement (SLA) determining an output rate based upon an aggregate rate enabled by said K memory containers; and  
a synchronous output buffer operatively associated with said controller and said N memory containers and operative to output the mapped data frames from the K memory containers under control of the controller thereby providing synchronous transmissions at said output rate.

8. The apparatus according to claim 7 and wherein said controller is also operative to prevent transmission of said Ethernet frames at a capacity that reaches or exceeds a capacity allowed by the SLA.

5 9. The apparatus according to claim 7 and wherein said Ethernet-over-synchronous communication network comprises at least one of the following: Ethernet-over-SONET; and Ethernet-over-SDH network.

10 10. The apparatus according to claim 7 and wherein said input rate comprises one of the following: a rate of 1 gigabit per sec; a rate of 10 gigabit per sec; a rate of 100 megabit per sec; and a rate of 10 megabit per sec.

11. The apparatus according to claim 7 and wherein said controller is operative to dynamically select said K out of the N memory containers and to  
15 dynamically generate the pause signal in accordance with an SLA provisioned or determined in real-time.

12. The apparatus according to claim 7 and wherein said threshold capacity level is lower than the entire capacity of said Ethernet receiving buffer.

20 13. An Ethernet-over-synchronous communication system comprising:  
an Ethernet interface operative to provide Ethernet frames generated by a service provider at an input rate;

25 a synchronous mapper operatively associated with the Ethernet interface and including N memory containers, said mapper being operative to convert said Ethernet frames at the input rate into mapped data frames in a synchronous protocol at an output rate which is an aggregate rate enabled by K out of the N memory containers that are loaded with said mapped data frames; and

30 a synchronous network operatively associated with the synchronous mapper and operative to receive from the mapper said mapped data frames from said

K memory containers and to transmit said mapped data frames in a synchronous transmission at said output rate to a customer.

14. The system according to claim 13 and wherein said output rate is  
5 determined by an SLA through a selection of K.